

Web Based Programming Languages that Support SELENIUM Testing

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Abstract- The goal of this paper is to highlight the challenges on web applications testing and describing methods of employing the features provided by the SELENIUM toolset. We will first introduce the SELENIUM TOOLSET and then we will conclude with the sketch of ongoing discussions and overall observations with respect to different programming language (C#, JAVA, PYTHON, Java script, XML, PHP, Ruby) on which SELENIUM can be used as a testing tool.

Keywords: Testing tool; web languages; web application; tool set;

I. INTRODUCTION

SELENIUM is a testing tool for testing web application, it conducts test without learning the test scripting language (SELENIUM IDE). As Web applications have turned into one of the quickest developing types of programming Software day by day. Testing of all today's web applications is a greater task for analyzer to check whether these created web application languages are free of error or not. Languages (C#, PHP, JAVA, PYTHON, HTML, JavaScript, CSS, XML, Ruby) collaborate with one another to make web application. So we required an apparatus to test web application that based on distinctive editors. We conduct a survey in which we Research all Programming Languages in which Analyzers are Using SELENIUM as a testing tool.

II. SELENIUM TOOLSET

SELENIUM TOOLSET [8] provides facility to run different automation of testing, that can be integrated with many different other testing tools and platforms. SELENIUM makes possible to accomplish many testing stages that should be done for making good products with quality. SELENIUM architecture allows us to use it in several nice ways of testing. SELENIUM tests directly run on web browser. It uses Java Script to insert the test automation engine. Most of the popular browsers such as Firefox and Chrome supports SELENIUM testing. The SELENIUM modules give facility of standard orders of carrying on and route in web program such as "open a URL connection", "tap on component", or "written into content box". It additionally gives confirmation commands to check if the real values coordinate the desired results. SELENIUM consists of several tools such as [1]

- **SELENIUM Core:** SELENIUM Core is a JavaScript framework that is used to write test cases in HTML. It needs installing SELENIUM IDE in web programs to execute experiments written in HTML.
- **SELENIUM IDE:** This is integration plugin for connecting SELENIUM RC with the web browser. IE, Google Chrome, and Firefox. is supported by SELENIUM IDE.

- **SELENIUM Client API:** The SELENIUM API additionally gives integration between test execution tools to the web browser through the SELENIUM Remote many popular programming languages such as java, C sharp,PHP,Python described by SELENIUM Client API.



Figure 1. SELENIUM RC Architecture

Figure 1 demonstrates the structural engineering of SELENIUM RC and how it is confined with browser [2]. All cases collected in programming languages using SELENIUM API interfaces with the SELENIUM RC to run tests. The set of basic SELENIUM APIs is collected in Table 1.

Table 1. SELENIUM APIs

Name	Description
SELENIUM .start()	Begins automation, conveys purpose of AUT to the place where SELENIUM server is and runs the server. Takes AUT to the grave URL.
SELENIUM .open()	Gets the title of the current browser window.
SELENIUM .windowMaximize()	Boosts the present window.
SELENIUM .click()	Clicks gave connection or catch on the present window.
SELENIUM .windowFocus()	Gets the focus on the current window
SELENIUM .getTitle()	Gets the emphasis on the present window.
SELENIUM .close():	Shuts the present program window.

- **SELENIUM Remote Control (RC):** The commands sent via HTTP. This service written in programming language Java that can be installed locally. The server launches browser and executes test cases automation.
- **SELENIUM WebDriver:** Additionally WebDriver supports acceptance of commands through the Selenium script language. Unlike SELENIUM RC, Web Driver does not require launch SELENIUM server. This is successor of SELENIUM RC.
- **SELENIUM grid:** The SELENIUM grid behaves as a center between few machines. This can help to assemble the adequacy of testing by executing tests in parallel. This server offers likelihood to execute tests remotely.

III. SELENIUM APPLIED LANGUAGES

A. Mobile Web Application Testing

- *The Mobile Network in 2014*

World wide portable information activity grew 69 percent in 2014. World wide versatile information movement came to 2.5 exabytes for every month toward the end of 2014, up from 1.5 exabytes for each month toward the end of 2013[9], and it develops quickly step by step. It Provide numerous great web application with awesome quality upgraded for cell phone is get to be crucial part in today organizations [3]. The convenience, great presentation and general quality of web applications upgraded for versatile gadgets is get to be imperative part. This makes testing for portable web application a key and mandatory stage in the improvement.

With SELENIUM toolset, it is possible to execute automation tests in popular market devices (Android and iOS) that is written in Objective C. Testing can be executed in real devices or emulators [4]. Tests can be written in java or any other SELENIUM IDE for testing mobile web applications on android OS, Since SELENIUM toolset, android webdriver and iOS web driver are open source projects any designer can take part and offer hone with thoughts. On the off chance that there ought to be an event of using the Android testing structure, tests must be made in Java and upheld in required languages. To run tests on iOS working framework gadgets, iPhone drivers must be introduced and installed.

B. C#, JAVA, PYTHON

A popular testing framework, particularly suited for web applications, is SELENIUM provided by SELENIUMhq[4]. It is cross platform open source testing framework, developed under the Apache Server 2.0 License. It support C#, java, and python [5] and provides automation of testing.

C. PHP

SELENIUM toolset conveys probability to use any testing device which can be executed with SELENIUM API language, for example, java, php, and python.

D. Java Script, XML

At the point when creating web programming, a definitive objective of the analyzer or engineer is to guarantee that the application is tried frequently and completely. As a rule, making automated test scripts is the most ideal approach to make certain that this objective is refined. Specifically, the developer needs to make sure to make viable test scripts that will last through the numerous progressions that applications experience. In the event that changing or refactoring the test script does get to be important, there are approaches to verify this occupation is done rapidly and accurately. The key course is to keep up a vital separation from test duplication. By keeping specific tests

independent, they can be reused in a couple places and emerge conformity would be crucial for all events. An Open Source test device, SELENIUM IDE has various ideal circumstances, including a simple to utilize record and playback apparatus, and the capacity to test JavaScript within the program. Be that as it may, as experiments must be run consecutively and can't be inserted in each other in the IDE, written work more elevated amount test scripts can sometime be troublesome. Likewise, the log, which uncovers regardless of whether tests have run effectively, obviously can't be traded. Then again, with everything taken into account, the easy to understand nature and the capacity to alter summons by means of client expansions make SELENIUM IDE a perfect test suite advancement environment from various perspectives [11]. There is additionally probability to import models from different editors that written in XMI, or XML. It creates test cases from xml scripts and executes tests by SELENIUM IDE.[8] for testing.

E. Ruby

Webmate an instrument for testing web applications utilized for testing web 2.0 application[6]. Tools that mechanize programs ("Web program drivers") by driving them, for example, using COM calls in the case of Examples of such tools are Watir (Ruby)[7] used for testing web application developed in Ruby.

IV. CONCLUSION

We concluded that general testing systems and clarified the testing components have given by the SELENIUM toolset. In addition, we told diverse web languages on which SELENIUM us as a testing device. An arrangement of instruments giving such elements have been shown.

The improvement of the SELENIUM toolset is exceptionally dynamic for testing. New features are added almost on a daily basis and developers are needed to be responsive to have a good knowledge about newly introduced features. SELENIUM is positively worth assessing for anybody hoping to include an intense web testing device to their toolbox. It is a vast area of stage capacity makes it effective for carrying good quality services with extensive business sector catch. Almost every Web Application can be tested by SELENIUM easily using particular Selieneum IDE according to language . In future we can apply SELENIUM as a testing tool on upcoming programming languages Such as R, Swift, Shell etc.

REFERENCES

- [1] Bruns, A., Kornstädt, A., & Wichmann, D. (2009). Web application tests with SELENIUM .*Software, IEEE*, 26(5), 88-91.
- [2] Niyazimbetov, R. WEB APPLICATION TESTING SOLUTIONS WITH SELENIUM .
- [3] Paulson, L. D. (2005). Building rich web applications with Ajax. *Computer*, 38(10), 14-17.
- [4] Niyazimbetov, R. MOBILE WEB APPLICATION TESTING SOLUTIONS WITH SELENIUM .
- [5] Bruns, A., Kornstädt, A., & Wichmann, D. (2009). Web application tests with SELENIUM .*Software, IEEE*, 26(5), 88-91.
- [6] Yorozu, T., Hirano, M., Oka, K., & Tagawa, Y. (1987). Electron spectroscopy studies on magneto-optical media and plastic substrate interface. *IEEE Translation Journal on Magnetics in Japan*, 8(2), 740-741.
- [7] Gupta, M. G. Saurabh Dwivedi M. Tech (CS&E) School of Computing Science and Engineering Galgotias University, Greater Noida, UP.
- [8] Niyazimbetov, R. WEB APPLICATION TESTING SOLUTIONS WITH SELENIUM .
- [9] Index, C. V. N. Global Mobile Data Traffic Forecast Update 2014–2019. White Paper c11-520862. Available on http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html.

[10] Root, R., & Sweeney, M. R. (2006). Automated Software Testing with. NET. *A Tester's Guide to. NET Programming*, 1-10.